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ABSTRACT

The effectiveness of an experientially designed library instruction presentation was compared to a lecture format by assessing the library skills and attitudes toward libraries and librarians of 50 freshman and sophomore students enrolled in educational psychology and human development courses before and after instruction. One group of undergraduates received an experiential/workbook lesson, another received a lecture, and a control group received no instruction. Instruments developed for this study were a library skills test and an attitude survey composed of five factors: correct use of the library, interest in scholarly work, receptiveness to library instruction/future usefulness, attitudes toward librarians, and comfortable use of the library. Results indicated that the experiential format was more effective in producing an increase in library skills scores at the second measurement (after instruction) than the lecture method. But both of the groups receiving instruction produced higher library skills test scores at the third measurement (end of term) than the no-instruction control group. A significant relationship was also found between initial attitudes toward librarians and later library skills as well as between initial skills and later attitudes toward librarians. (Author/DMC)

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The Effects of Two Methods of Course-Related Library Instruction on Undergraduates' Library Skills and Attitudes

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Abstract

The effectiveness of an experientially designed library instruction presentation was compared to a lecture format by assessing library skills and attitudes toward libraries and librarians before and after instruction. One group of undergraduates received an experiential/workbook lesson, another received a lecture, and a control group received no instruction. Instruments developed for this study were a library skills test and an attitude survey composed of five factors: Correct Use of the Library, Interest in Scholarly Work, Receptiveness to Library Instruction/Future Usefulness, Attitudes Toward Librarians, and Comfortable Use of the Library. Results indicated that the experiential format was more effective in producing an increase in library skills scores at the second measurement (after instruction) than was the lecture method. But the groups receiving both instructional methods produced higher library skills test scores at the third measurement (end of term) than did the no-instruction control group. A significant relationship was also found between initial attitudes toward librarians and later library skills as well as between initial skills and later attitudes toward librarians.

Some of the most important learning experiences in undergraduate education involve skill in the use of the library, familiarization with resource materials such as indexes and abstracts in special fields, and the proper use and citation of reference material. It is expected that effective library instruction related to specific coursework would make specialized information more readily accessible to students, and that familiarity with a broader range of aspects within these subject areas would perhaps result in students selecting careers in these fields and continuing in graduate programs which require scholarly research.

Library instruction has historically been recognized as an essential academic activity of the library science field, but research in library instruction has progressed slowly until recently. For the past fifty years educational research in American libraries has focused on the "need" for undergraduate library instruction. Early attempts to assess such instructional programs were evidenced through the creation of testing instruments. Reed (1938) was among the first to measure effectiveness of instruction through a specifically designed test. Subsequently, other tests such as the "Peabody Library Information Test" (Shores and Moore, 1938) and the "Feagley Library Orientation Test for College Freshmen" (Feagley, 1955) were formulated to measure undergraduate knowledge of and familiarity with libraries. In addition, many library

educators have developed and used their own instruments since there is no acceptable standardized test. (For a recent exception, see Illinois Association for College and Research Libraries, 1980).

In the 1950's and 1960's audiovisual material, teaching machines, programmed learning, computers and closed circuit TV were utilized as library instruction devices. Although many of these devices were found to be useful motivators and stimulated the curiosity of undergraduates, equipment and programs were costly. According to Genung (1967), mechanical problems undermined the popularity of these instructional devices and their proliferation therefore declined.

In the 1960's, the theoretical foundations of library educational research expanded and moved from "need justification" to application. An experiment at the Monteith College Library (Knapp, 1966) promoted a new concept of education which de-emphasized class lectures, and instead, focused on independent study and the integration of coursework with library-use assignments. The success of the Monteith College Library Experiment may be measured by its effect on academic attitudes, and it is now believed important that library instruction be integrated with specific class assignments.

This expanded view of education enabled library educators to turn their attention to an examination of the content,

motivational aspects and methods of library instruction. For example, Paterson (1978) attempted to establish a baseline of appropriate content of library instruction. Her survey showed that there was little difference between undergraduate and graduate students in their knowledge of specific library resources. She suggested that motivation to learn would be increased if students were aware of their current level of library skills.

Researchers such as Kirk (1971) examined instructional methods by comparing a two hour lecture demonstration and a self-paced guided exercise for their effectiveness. The same material was presented in each form of instruction, and no significant difference between the methods was discovered. Likewise, student evaluation of the instructional models provided no evidence to suggest a superior method of instruction. On the other hand, Kuo (1976) examined six distinct methods of instruction (lecture, audio, slide/tape, audiotutorial, television and audiovisual) and found that the self-paced audiovisual group with question and answer follow-up received the highest scores on a test of library skills.

More recently, emphasis has been placed on the humanistic aspect of library instruction. Brewer and Hills (1976, p. 37) believe that "well established methodologies using pre-tests and post-tests with experimental and control groups

of students need to be tempered by a humanistic appreciation of the complexity and subtlety of the teaching and learning process and the relationship between teacher, student, media, library and environment." The importance of the interactive effect of the student-teacher relationship and the superior effectiveness of experiential learning programs in terms of learning and attitudes was also emphasized by Rogers (1969).

The present study attempted to show that a group actively involved in a library training module would show greater positive changes in attitudes towards libraries and librarians and greater increases in library skills than a group which received only a lecture about library resources. However, it was expected that the lecture group would show greater positive changes in attitudes and library skills than would a control group. For all three groups, it was also expected that library skills scores would correlate positively with attitude scores at each time of measurement and across measurement times.

Method

Subjects

Fifty freshman and sophomore students enrolled in Educational Psychology and Human Development courses were tested for their knowledge of library resources and their attitudes toward use of libraries and toward librarians.

Thirteen students in one educational psychology course comprised the Experiential/Workbook group. Twenty four students in a human development course constituted the Lecture group. The Control group consisted of thirteen students from two different education courses. Students in each of the three groups were assigned a library research assignment to be completed during the term.

The majority of subjects in the Workbook group were incoming freshmen with some high school library instruction but no previous or concurrent college library instruction. The majority of subjects in the Lecture group and the Control group were sophomores with some high school library instruction as well as some previous or concurrent college library instruction. These discrepancies will be discussed in a later section of this paper.

In addition to these fifty subjects, data from another 28 students who were not present for all testing sessions were considered in statistical analyses assessing the reliability of testing materials.

Measures

Library Skills Test: Three equivalent test forms were constructed to measure each student's ability to use the card catalog, the Library of Congress Subject Headings, and periodical indexes. A different form was used for each

testing session. Each test contained 24 items, and the variation from test form to test form consisted only of a different test example being used in 3 of the 24 questions. Alternate forms reliabilities for the library skills test among the control group ranged from .72 to .76 ($p<.01$). These reliability estimates were supported in the other two groups as well.

A subject's score on each form of the library skills test could range from 0 to 24 as each question was worth up to 4 points. Partial credit was given for partially correct responses.

Attitude Survey: Based on the results of a pilot test administered to 142 students, a 31 item survey was constructed for the present study to assess student attitudes toward libraries and librarians. Students were asked to indicate the extent to which they agreed with statements such as those listed in Table 1. Subjects circled a "1" to indicate that they agreed with the statement to a small extent or not at all, a "2" to indicate that they agreed to a moderate extent, and a "3" to indicate that they agreed to a large extent.

Insert Table 1 about here

Following the first administration of this survey to students in the present study, a factor analysis involving iterations for stable communalities and rotated according to the varimax rotation was performed on the data. Five scales were created to correspond to those five factors loading on items with a value of .30 or above. These five factors accounted for 30% of the total variance. As indicated in Table 1, 28 items were retained and each factor consisted of approximately 5 to 7 items. A subject's estimated score for each factor, referred to as a factor scale score, consisted of the sum of the values circled for each item within the factor. These five factor scale scores are used in all subsequent analyses concerning attitudes.

The retest reliabilities of the attitude survey were assessed by correlating the Control group's factor scale scores for each factor across the three times of measurement. The Pearson product moment correlations for each factor were significant at the ($p \leq .10$) level or below in all but one case (range = .34 to .89, median = .68), thus indicating a high degree of temporal stability for the attitude assessments. These reliability estimates were supported in the other two groups as well. The internal consistency of the 28 item survey was also assessed by calculating the

Cronbach alpha coefficients for each factor after the first assessment. The coefficients ranged from .67 to .78 (median = .76), thus indicating a high degree of internal consistency among the items within each factor.

Procedure

During the first week of the term, all subjects were given a consent form, an explanation of the study, a biographical data sheet (assessing age, sex, term standing, study guide usage, previous exposure to library instruction), the attitude survey, and the library skills test.

During the week following this assessment, the campus reference librarian (first author) introduced an experientially designed method of instruction to the students in the Experiential/Workbook group. The presentation included a workbook module in which each student, working in groups of six to eight, completed a series of questions constructed to illustrate the use of various reference tools. Sources such as Psychological Abstracts, Education Index, Library of Congress Subject Headings, and several specialized encyclopedias and dictionaries were located at five different stations in the classroom. Students checked their answers with the answer key before moving to the next station. Each group completed five different sections of the workbook corresponding to each station during the one class period

allotted to this instruction. The librarian assumed the role of resource person during this session.

The students in the lecture group heard a 60 minute lecture from the librarian. The lecture covered the identical material as that contained in the workbook.

The students in the control group were given no special library instruction. They completed the attitude survey and the library skills test according to the same schedule as the students in the two experimental groups. During the fifth week of the term, and during the final (tenth) week of the term, subjects in all three groups again responded to the attitude survey and to equivalent forms of the first library skills test.

Results and Discussion

Several 3 (Group) x 3 (Time of Measurement) unweighted means analyses of variance with repeated measures on the second factor were performed on the library skills test scores and on each of the five attitude factor scale scores.

Library Skills

For library skills test scores, it was expected that the workbook group would improve more than the lecture and control groups given the presumed impact of experiential learning, and that the lecture group would improve more than the control group given the beneficial effects of some form

of library instruction. The following results indicate support of these hypotheses. The analysis of variance indicated a significant Group effect ($F_{(2,47)} = 4.35$, $p<.05$), a significant Time of Measurement effect ($F_{(2,94)} = 14.63$, $p<.001$) and, most importantly, a significant interaction between Group and Time of Measurement ($F_{(4,94)} = 5.58$, $p<.001$). Following simple effects analyses, Tukey post hoc tests indicated that the Workbook group improved significantly ($p<.01$) between Time 1 and Time 2, and between Time 1 and Time 3. The Lecture group showed significant ($p<.01$) improvement only from Time 1 to Time 3. And, as indicated in Table 2, no change was found in the library skills test scores of the Control group across the three times of measurement.

Insert Table 2 about here

Thus, even though library assignments were mandatory in all three groups, improvement in library skills occurred only in the two groups receiving library instruction. Although both instructional groups increased their scores between Time 1 and Time 3, the Experiential/Workbook method of instruction was more effective in obtaining immediate improvement (at Time 2) than was the Lecture method. Whereas the Workbook group had received feedback as to their assignment related to the library instruction by Time 2, the Lecture

group's completed assignment was not due until well after the Time 2 assessment. The Lecture group received ongoing feedback until their assignments were completed at Time 3 and this may have accounted for their increased knowledge gain at this later time. This finding is congruent with Paterson's (1978) belief that students are more motivated to learn if they are aware of their level of library skills.

The extent of the effectiveness of the Lecture method is evident, however, when the Lecture group and the Control group are compared. We found that despite their similar levels of previous exposure to library instruction, their near identical mean scores on the library skills test at Time 1, and the similarity of their library assignments for the term, it was only in the Lecture group that significant gains in library skills test scores occurred by the third time of measurement.

Attitudes

It was hypothesized that the Workbook group, which received experiential instruction, would show greater positive change in attitudes between Time 1, Time 2, and Time 3 than would the Lecture group, and the Lecture group would show more positive change between Time 1, Time 2, and Time 3 as compared with the Control group. The following results indicate partial support of these hypotheses.

Perceptions of Library Skills (Factor 1)

The analysis of variance indicated a significant interaction between Group and Time of Measurement ($F_{(4,94)} = 7.42$, $p < .001$). Following simple effects analyses, Tukey post hoc tests indicated that the Lecture group showed a significant ($p < .01$) increase in perceived library skills from Time 1 to Time 2 and from Time 1 to Time 3. There were no other significant changes (see Table 2).

It was only in the Lecture group, therefore, that perceptions of correct use of the library increased over the three time periods and increased along with their improving library skills test scores. This accuracy in perception may have been due to the ongoing feedback related to research competence which the instructor of this group provided over the entire course of the term.

While the actual library skills test scores of the Workbook group did increase across testing times, students' perception of their skills in library usage did not change accordingly. Furthermore, the Workbook group had higher scores on Factor 1 (Perception of Library Skills) than did the Lecture group at Time 1 even though Scheffe post hoc tests comparing the groups at each time period revealed that the actual library skills test scores of the Workbook group were significantly lower than those of the Lecture group at Time 1 ($F_{2,47} = 3.31$, $p < .05$). This finding is supported by Burton's (1977) statement that students may not be the best subjective judges of their own library

usage competence. But students may become better judges with increasing term standing. That is, the Workbook group's discrepant perceptions as compared to the Lecture group's accurate estimates may be a function of the differences in term standing between these two populations. Students in the Workbook group, composed largely of freshmen, may have less accurate self-perceptions than students in the Lecture group which was composed mostly of sophomores.

Interest in Scholarly Work (Factor 2)

The 3x3 ANOVA indicated no significant effects for this factor of the attitude survey. Thus the analysis did not reveal any effect of library instruction on students' desire to engage in scholarly research.

Receptiveness to Library Instruction/Future Usefulness (Factor 3)

A significant Time of Measurement effect was found ($F_{(2,94)} = 4.48$, $p < .01$) for this factor. The Tukey post hoc tests indicated that a significant ($p < .05$) negative change in attitude occurred on this factor from Time 1 to Time 2 for all three groups. There were no other significant changes (see Table 2).

We might conclude from this finding that those students who had received instruction felt that it was sufficient and/or that additional instruction would have no helpful impact on future academic or professional careers. While the same results were found in the Control group which had received

no instruction at this time, it is important to note that most subjects in the Control group had received previous college library instruction. The occurrence of a negative attitude change on this factor across all three groups does suggest that in library instruction related to specific course areas, the generalizability of such knowledge to other courses and subsequent vocations might well be more heavily emphasized.

Attitudes Toward Librarians (Factor 4)

The analysis of variance indicated a significant Group x Time of Measurement interaction ($F_{(4,94)} = 3.18$, $p<.05$) for this factor. Following simple effects analyses, Tukey post hoc tests indicated that the Lecture group showed a significant ($p<.05$) positive change in attitude on this factor from Time 1 to Time 3. These results could be accounted for in two ways. The library assignment for the Lecture group required that contact with librarians take place over the entire length of the term. This was not the case for the Workbook group. The second possibility is inherent in the very nature of the differences between the Lecture and Experiential methods. In the Lecture method, the librarian/instructor's personal qualities are more dramatically apparent. In the experiential design, in contrast, the instructor acts mostly as a resource consultant because students are centered on their individual involvement with the instructional material

and are encouraged to feel less dependent on the instructor for every aspect of the learning experience. It may be that the greater dependence on the instructor for direct information and also the greater amount of contact with librarians over time in the case of the Lecture group accounts for the differential changes between groups in attitudes toward librarians.

Comfortable use of the Library (Factor 5)

While the 3x3 ANOVA indicated no significant effects for Factor 5, there was a trend towards significance for the Time of Measurement effect ($F_{(2,94)} = 2.67$, $p = .07$). As Table 2 indicates, there seems to be an increase in feelings of comfort from Time 1 to Time 3 across all three groups. This would suggest that regardless of formal library instruction, additional experience in the use of the library, per se, can contribute to students' feelings of comfort while in the library.

Relationship between library skills and attitudes

In order to determine whether the hypothesized relationship between library skills test scores and attitude scores existed across all three groups, average correlations were obtained by weighting and summing across the Fisher Z transformations of the respective within group Pearson product moment correlation coefficients. Given the small sample sizes and the exploratory nature of these analyses, a liberal

significance level ($p<.10$) will be reported.

A relationship was found between library skills test scores and perceived library skills (Factor 1) at Time 1 ($r_{(37)} = .32$, $p<.05$). This would indicate that, overall, our subjects were accurate in their perceptions of their own library skills.

The remaining findings demonstrate that there may be a rather complex bidirectional interplay between library skills and attitudes toward librarians (Factor 4). Library skills at Time 1 were related to attitudes toward librarians at Time 3 ($r_{(37)} = .28$, $p<.10$), which suggests that those students who knew more about library resources initially might have sought out librarians for help in finding and using such resources and that this continuous contact over the course of the term was associated with greater appreciation of this assistance. Perhaps those students who scored low on library skills at Time 1 were not well enough acquainted with the many possible resources available to request assistance and therefore did not establish rapport with librarians.

While the above suggests the impact of library skills on attitudes toward librarians, another finding suggests the impact of attitudes toward librarians on library skills. That is, a significant relationship occurred between attitudes toward librarians at Time 1 and library skills test scores at Time 2 ($r_{(37)} = .29$, $p<.10$). This result would suggest

that those subjects who initially feel positive toward librarians seem to profit more from their subsequent instruction and/or library experiences than do those students who start out with more negative attitudes.

Conclusions

Our results regarding the effects of two different types of library instruction on undergraduates' library skills can be compared to the results of previous research conducted in this area. The finding that both the lecture and workbook methods of instruction increased knowledge about library resources is consistent with Knapp's (1966) results in that coursework and library assignments were integrated. In addition, the more immediate effects noted in the Workbook group are consistent with Kirk's (1971) study which found improvement in a program that was self-paced and provided immediate feedback. The improvement found in the Lecture group seems to contradict Hill's (1974) observation that a "largely passive lecture is inappropriate." However, the continuous research consultation that the instructor in this group maintained throughout the term may have accounted for the increased library skills scores at Time 3. This continuous feedback may be one of the important interactive variables involved in instructional effectiveness as discussed by Brewer and Hills (1976).

While we did not find the expected across the board

relationships between attitudes and skills, we did find some indication that initial attitudes toward librarians related to library skills at a later time and that initial library skills are related to later attitudes toward librarians. While these findings are merely correlational in nature, and no cause-effect implications can be made, they do appear to support Line's (1963) suggestion that attention should be paid to both instruction in library skills and attitudes towards library staff.

In discussing the limitations of the present study, it should be noted that Burton (1977) indicated that one of the problems endemic to studies of library instruction effectiveness is the difficulty in locating "uncontaminated" subject groups. In the present study, there were differences in term standing between the Workbook group on the one hand and the Lecture and Control groups on the other. Furthermore, the nature and timing of library assignments as well as the amount of teacher-student involvement in library-related research assignments was disparate across groups.

Future research should include an attempt to either control for the disparate variables mentioned above and/or to systematically assess the effects of these differences. Since the development of special experiential materials like the workbook used in the present study demanded much more librarian preparation time than did the lecture notes,

additional information is needed to assess the cost effectiveness of this kind of investment in time and labor. Such an evaluation might include a comparison of the long term effects of each instructional method. There is a need for further validation of the two testing instruments developed for the present study. In addition, future researchers should investigate and design a study that would contrast a credit course in library studies with a series of course-related instruction sessions in different subject disciplines.

Based on our finding that students felt less receptive to library instruction as the term progressed and perceived such instruction as being less useful in the future, we would suggest that teachers and librarians might further enhance student interest in library instruction by emphasizing its importance in obtaining information for vocational, academic, and personal needs.

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Table 1

ITEMS IN ATTITUDE SURVEY GROUPED ACCORDING TO FACTORS

Factor I Perceptions of Library Skills	Factor II Interest In Scholarly Work	Factor III Receptiveness to Library Instruction/Future Usefulness	Factor IV Attitudes Toward Librarians	Factor V Comfortable Use of the Library
I believe that I can find what I am looking for in the library.	The library is a place to research information.	I consider instruction in the use of the library and its various resources to be valuable.	When I ask for assistance, librarians help me find what I am looking for.	I can concentrate in the library.
I feel confident about my ability to use libraries.	I enjoy researching a subject or topic in the library.	I believe that I will use my library skills in several of my college courses.	I believe that librarians truly want to help students find information.	Libraries are comfortable places.
I believe that I make good use of the card catalog in the library.	I would eventually like to have a job that required extensive library research.	I believe that knowing how to use a library will increase my chances of getting good grades.	When I have difficulty using one of the library resources or reference books, I feel that I can ask a librarian for assistance.	I enjoy browsing in the library.
I believe that I use an efficient method in locating books and reference material on the shelves.	I think that assignments requiring library research are useful.	Having library skills will be important to my future academic success.	I feel comfortable asking a librarian for assistance.	I like being in libraries.
I feel for the most part I can use the library without asking for help.	I like projects requiring that I work in the library so that I can put my library skills to use.		I find that librarians are knowledgeable people.	I enjoy doing homework and/or studying in the library.
I believe that I make correct use of the indexes and abstracts which cover educational, psychological, and/or sociological material.	I really like assignments that require library research.			I make good use of my time in the library.

Table 2

MEAN SCORES OF TREATMENT GROUPS AT EACH TIME OF MEASUREMENT

		Experiential/ Workbook	Lecture	Control
Library Skills Test	Time 1	58.61	68.87	67
	Time 2	71.85	72.42	67
	Time 3	70.08	76.04	66.85
Factor 1 Perceived skills	Time 1	12.92	11.16	13.15
	Time 2	11.77	13.46	13.08
	Time 3	12	14	13.23
Factor 2 Interest	Time 1	11.61	10.96	11.69
	Time 2	12	11.79	11.54
	Time 3	11.54	11.62	10.85
Factor 3 Receptiveness	Time 1	13	13.79	13.08
	Time 2	12	13.21	12.08
	Time 3	12.54	13.29	11.92
Factor 4 Librarians	Time 1	12	12.21	11.85
	Time 2	10.92	13.04	11.31
	Time 3	12.08	13.12	11.38
Factor 5 Comfort	Time 1	12.69	12.50	12.92
	Time 2	12.61	12.71	12.85
	Time 3	13.46	12.75	13.61